



NETWORKS



# TIBCO Upgrade Project

New Hub Message Processing Issue – ReMCoWG Update –

4<sup>th</sup> Nov 2015

- Part of the project System Integration Test phase execution was to compare the same XML message files output by the current TIBCO solution (schema v10) against those output by the new TIBCO solution (schema v11)
- It was confirmed that all fields and values matched (except for version number and timestamp values - as expected). However, the following discrepancies were noticed in the v11 messages that passed through the new Hub:
  - Some decimal and integer fields had values padded out but with leading and/or trailing zeros and/or spaces. Some examples include e.g.
    - " 3683.00000000" instead of "3683"
    - "01" instead of "1"
    - "0.055000000000000" instead of "0.055"
  - The MarketTimestamp value in the header of v11 messages now represents the offset format in +00:00 as opposed to "Z" in the current solution e.g.
    - **Current:** <MessageHeader MessageTypeCode="352R" VersionNumber="10.00.00" MarketTimestamp="2014-11-13T10:45:45.3Z" SenderID="DSO" RecipientID="Sxx" TxRefNbr="0000000309654966" />
    - **New:** <MessageHeader MessageTypeCode="352R" VersionNumber="11.00.00" MarketTimestamp="2014-11-13T10:45:45.3+00:00" SenderID="DSO" RecipientID="Sxx" TxRefNbr="0000000309654966" />

# Why the differences?

- The SAP IS-U central market systems of ESBN and NIE store and output numeric field values with leading and/or trailing zeros or spaces e.g.
  - " 3683.00000000"
  - "01"
  - "0.055000000000000"
- ESBN SAP system outputs the MarketTimestamp offset in the format +00:00 e.g.
  - ="2014-11-13T10:45:45.3+00:00"
- NIE SAP system does not output a MarketTimestamp offset
- The current TIBCO solution uses a native TIBCO Parse XML function to validate messages against the schema – this TIBCO function automatically trims numeric fields of any trailing and leading zeros/spaces. It also applies “Z” offset to date fields where it encounters an offset
- The new TIBCO solution uses a different method to validate messages against the schema – this method does not change any value or data type format it receives, inbound or outbound, as long as the format passes schema validation...

# Why was this approach taken?

- **The current legacy solution uses the TIBCO "Parse XML" activity to validate the inbound message types against the MM schema for both inbound and outbound directions, and has the following drawbacks:**
  - **Lack of Schema Extensibility** - The Parse XML activity requires a "Schema" parameter which is hardcoded and cannot be changed at runtime. If additional MM types are created, the TIBCO project will have to be changed to add a corresponding set of processes and schema resources.
  - **No Code Reuse and Performance implications** - There is no reuse of functionality leading to bloated code and associated maintenance overheads. The Parse XML activity loads the schema resources from the .xsd file into memory for every process call. This is a performance overhead as the .xsd resources are static and are ideal candidates for in-memory caching.
  - **No Preservation of Message Payload** - The TIBCO Parse XML Activity performs a payload validation when the "Validate Output" checkbox is checked. This changes the output data structure as observed during the comparison testing of the XML files between the new and old solution.
- **The new TIBCO solution uses a different approach to validate the inbound message types against the MM schema for both inbound and outbound directions, and has the following advantages:**
  - **Code Reuse and Packaging** - There is a single utility service in the new TIBCO solution. This guarantees code reuse across every message type in both inbound and outbound processing flows aligned with the TIBCO Audit Report recommendations.
  - **Extensibility - Dynamic Resolution of Message Type and xsd** - The following inputs are used to execute the validation including SchemaLocation, Version, MessageTypeCode, isOutboundMessage and Payload. This allows the new solution to resolve the market message type, version and direction at runtime and use the correct set of element / attribute types for validating the xml payload. If changes are made to existing xsd files, or a new market message type is introduced, the relevant schema file is updated / added to the filesystem. There will be no need to change any of the TIBCO or Java related code and components.
  - **Performance Improvements using In-Memory Cache** - The solution contains an in-memory cache. When the validation activity is called for the first time it loads all the xsd files into memory using a collection object. For all subsequent calls, the cache is used to access xsd resources.

- **For both the current and new TIBCO solutions:**
  - All numeric values remain the same – it is only the formats in which these values are passed that may be changed e.g.
    - " 3683.00000000" instead of "3683"
    - "01" instead of "1"
    - "0.0550000000000000" instead of "0.055"
  - All value formats pass schema validation
  - In the case of the MarketTimestamp
- **On that basis, Supplier engagement was required to help evaluate the extent of the issue:**
  - Initial Information Note issued on 24/09 for Supplier consideration
  - Concerns fed back to TUP leading to a further information note issued on 05/10
  - Further Supplier feedback led to a decision to postpone IPT (scheduled for 12<sup>th</sup> Oct.) on Friday 9<sup>th</sup> Oct. subject to further evaluation
  - A full set of test messages (from ESN and NIE) containing value formats in question issued to all on 14/10

- **Further evaluation by Suppliers confirmed:**
  - Some Suppliers would have problems processing numeric values / timestamp offset in the format they may be received
  - Some Suppliers would not have problems
  - Some Suppliers would require a significant amount of time to fully regression test backend systems and processes before knowing
- **Based on the above, it was decided that a change is required to remove the associated risk and three options were identified:**
  1. Change the new TIBCO solution
  2. Change the SAP PI systems of ESBN and NIE
    - SAP IS-U ↔ **SAP PI** ↔ TIBCO Hub
  3. Ask Suppliers to make the required changes

- The three options were analysed against each other and a change to the SAP PI system of ESN and NIE was the recommended approach on the basis that it is considered a less complex change to implement and can be delivered quicker than a change to the new TIBCO solution

## Summary of evaluation

	TIBCO Change	SAP PI Change	Supplier Changes	Notes
Time to Implement (Weeks)	12	7	?*	*This would require further, detailed evaluation by Suppliers
Impact on IPT / Market Assurance	↔	↔	↔	
Cost	↓	↑	?*	*This would require further, detailed evaluation by Suppliers
Risk	↔	↔	↓	
Aligned with Best Practice Design Principle(s)	↔	↑	↔	
Additional Impact on Suppliers	↔	↔	↓	

- The changes in SAP PI will mirror the behaviour of the current TIBCO solution
- Suppliers will notice no difference in message values/formats Inbound or Outbound





**End**

